ASX: GSN ASX ANNOUNCEMENT 7 April 2021



# EAST LAVERTON NICKEL PROJECT

Great Southern Mining Limited (ASX: GSN) (the "Company" or "GSN") is pleased to introduce the exploration activities at the Company's 100%-owned East Laverton Nickel Project in Western Australia.

## **Highlights**

- The 400km<sup>2</sup> East Laverton project has the potential to host massive nickel-sulphide deposits of both the magmatic type and the komatiitic type.
- GSN applied for the ground in 2018; one tenement was granted last year and the other 2 are expected to be granted shortly following recent progress on the negotiation of a Heritage Protection Agreement with the Nyalpa Pirniku Traditional Owners.
- There is a new level of understanding in WA on the formation of nickel-copper sulphides within magmatic rocks, leading to a wave of new discoveries such as Nova-Bollinger deposit in 2012 and more recently, Legend Mining's Rockford Project and Chalice Gold Mines Julimar Project.
- A review of the project by Newexco consultants re-interpreted the prospective magmatic basal contact to be the north-east of the Diorite Hill layered intrusion rather than the south-west as previously thought.
- A 45-day modern ground-based moving-loop electro-magnetic survey (**MLEM**) is proposed with the objective of finding Nova scale conductors.

#### GSN's Chief Executive Officer, Sean Gregory, commented:

"GSN's exploration portfolio is characterized by large prospective landholdings with >1,000km<sup>2</sup> at Edinburgh Park in North Queensland, >450km<sup>2</sup> in the Duketon Belt, Laverton and an additional >400km<sup>2</sup> at East Laverton."

"East Laverton is highly prospective for nickel-sulphide discoveries, including of the Nova magmatic style which was overlooked by previous explorers who were focused on other commodities and deposit types. We look forward to the results of the planned ground MLEM survey which will be the first modern EM over this target and will be aided by an alternative geological interpretation that places the prospective basal contact in the north-east, rather than the south-west."

"GSN now has exposure to gold at all of its projects and the added benefit of copper and other metals in North Queensland and also nickel-sulphide at East Laverton."

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### **Project Location and Land Access**

East Laverton is located 15km east from the town of Laverton in Western Australia (Figure 1) where Great Southern Mining Limited (ASX:GSN, **GSN**, the **Company**) maintains an exploration base to service its significant exploration portfolio in the region, including Golden Star and Cox's Find in the Duketon Belt to the north of Laverton and Mon Ami and Mt Weld south of Laverton.

The East Laverton project comprises three large exploration licenses that GSN applied for in 2018. One was granted last year (E38/3363) and two are expected to be granted shortly (E38/3362 and E38/3364) once heritage negotiations have been completed with the Nyalpa Pirniku Traditional Owners. These negotiations are progressing very well and GSN do not anticipate any delay to the grant of the tenements.

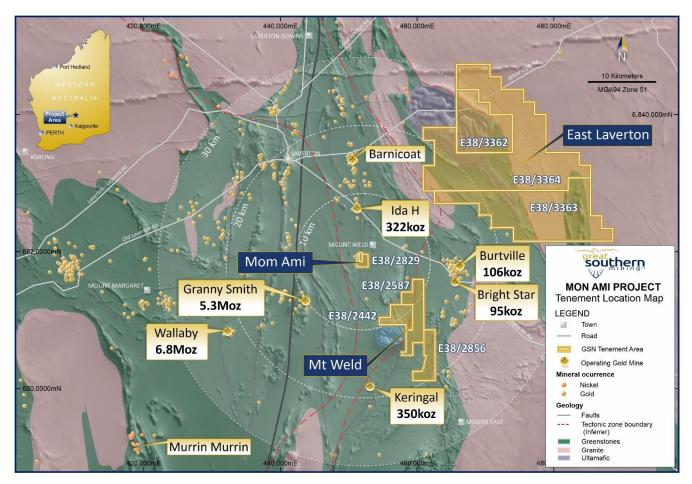


Figure 1: Location Map for GSN projects south of Laverton, Western Australia



### **Geology Review**

The East Laverton Project is dominated by the Diorite Hill Layered Ultramafic Magmatic Intrusion (**Diorite Hill**; Figure 1). Diorite Hill covers an area of approximately 110km<sup>2</sup> and consists of a thick (7,000m) cumulate rock sequence of interlayered peridotites, pyroxenites, gabbros and anorthosites. The southern and eastern part of the complex is contained within the project area.

Diorite Hill intruded a greenstone volcanic rock sequence indicated by the presence of non-cumulate mafic/ultramafic hornfels xenoliths within the complex. Diorite Hill is commonly covered by shallow modern aeolian sands that have hampered previous exploration.

Diorite Hill is abutted to the south by the Rotorua Komatiite, a 10km by 1.5km extrusive ultramafic. The Curara Komatiite is further to the east.

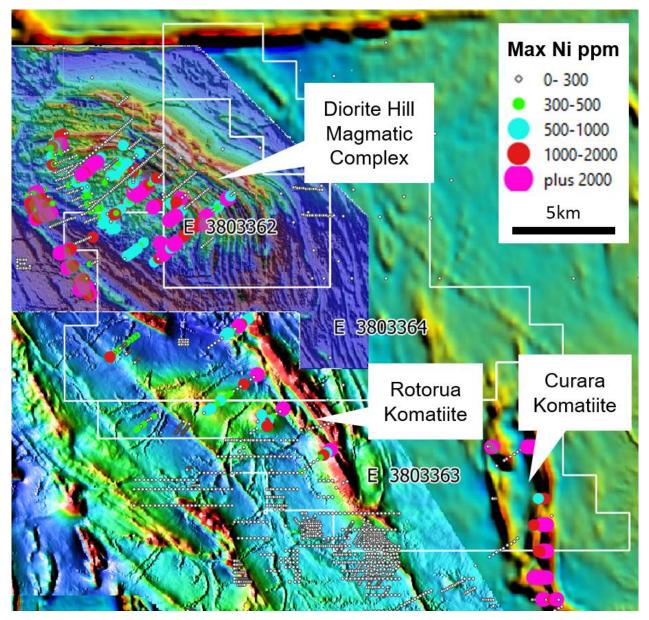


Figure 2: East Laverton Tenements with Magnetics and Maximum downhole Nickel Values



## Nickel Deposit Types

The East Laverton project has the potential to host both magmatic type deposits (in Diorite Hill; Figure 3) and komatiitic type deposits (in the Rotorua and Curara Komatiites). The two deposit styles are compared in Table 1.

Table1: Characteristics of mafic versus komatiite hosted nickel-sulphide deposits

Magmatic	Komatiitic
Intrusive Only	Mostly Extrusive
Polymetallic Ni, Cu, Co, +/- PGE, +/-Ag	Ni only
Large tonnage lower Ni grade	Smaller by higher Ni grade
Craton margin often in proterozoic mobile belts	Archean cratons
Ultramafic-Mafic	Ultramafic
Difficult to map with magnetics	Easy to map with magnetics
Nova, Savanahh, Nebo-Babel (Jinchuan, Noril'sk Voisey's Bay, Kabanga)	Kambalda, Mt Keith, Venus (Raglan)

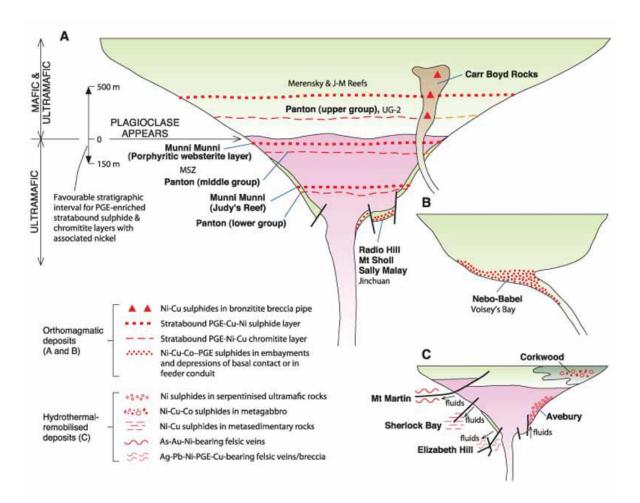


Figure 3: Schematic distribution of nickel-sulphide deposits associated with mafic ± ultramafic intrusions.



Komatiites flows have been the main source of developed nickel-sulphide mines in WA and have been explored extensively since the late 1960's. Due to their well understood geochemistry, formation, and high-grade sulphide enrichment process within defined channels, most of the studies and exploration programs in WA have focused on discovering this style of mineralisation. The Kambalda-Kalgoorlie-Leinster-Laverton Goldfields Region has been the main focus for komatiite exploration, with limited potential existing outside this region. Greenfield discoveries of komatiite nickel have reduced in recent years in the Goldfields Region and its only deep brownfields exploration that is delivering new nickel deposits.

Elsewhere around the world, large scale magmatic nickel deposits are the common place, producing worldclass deposits with long productive mine lives. In WA, magmatic nickel deposits occur scattered throughout the state, however, they have had a long and slow history of discovery, development and understanding. Its only in recent years, since the 2012 discovery of the Nova-Bollinger 13Mt @ 2% Ni 0.8% Cu and 0.1 % Co deposit (Figure 4) in the Fraser Range, that a string of magmatic nickel deposit have suddenly been discovered. As komatiite sources dry up, focus and understanding around magmatic nickel deposits is starting to gain momentum, resulting in exploration companies looking at various mafic-ultramafic bodies which have had limited to no exploration completed over them to date. This is resulting in a new level of understanding in WA on the formation/deposition of nickel-copper sulphides within magmatic rocks, leading to a wave of new discoveries.

Interest in magmatic nickel-copper deposits have had a resurgence with the recent discoveries of magmatic hosted sulphide mineralisation at Legend Mining's (ASX:LEG) Rockford Project and Chalice Gold Mines (ASX:CHN) Julimar Projects. It is this "Voisey Bay" magmatic style model has not been adequately explored at Diorite Hill. This represents a compelling exploration target opportunity which the Company intends to aggressively pursue.

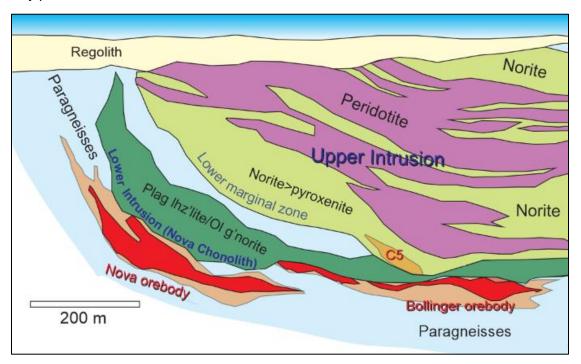


Figure 4: Nova-Bollinger east-west schematic long section, looking north (Taranovic et. Al., 2019)



## **Previous Exploration**

In the 1990's Aberfoyle Resources conducted 3 RAB drilling programs over Diorite Hill with 119 RAB holes for 4,619m and 4 diamond holes for 525m unsuccessfully targeting platinum and palladium mineralisation.

In 2002 Niwest drilled 15 vertical aircore holes for 534m, before Placer Dome Asia Pacific farmed into the project later that year. Placer Dome flew airborne high-resolution magnetics and a HoistEM survey over Diorite Hill in 2002 (Figure 5) and followed up with 171 mostly RAB holes for 7,224m and 2 diamond holes for 600m.

In 2000-2001 Heron Resources drilled 43 vertical RC holes for 1,390m targeting lateritic nickel-cobalt mineralisation over the Curara Complex, a komatiitic ultramafic unit towards the south east of GSN's tenure.

In 2014, White Cliff Minerals conducted soil sampling and trenching over Diorite Hill and the Rotorua Complex. However, due to the modern aeolian sand cover, the program was ineffective, only identifying anomalous results where the basement rocks outcropped.

Remarkably, little exploration has previously occurred over the Rotorua Complex. A few RAB lines by BHP-Utah in 1998 and Newmont Australia in 2005 crossed the Rotorua Complex, however the focus was exclusively on gold mineralisation.

Significant gold exploration has also occurred along the south-western edge of the tenements where the shears that host the Brightstar gold deposit trend undercover.

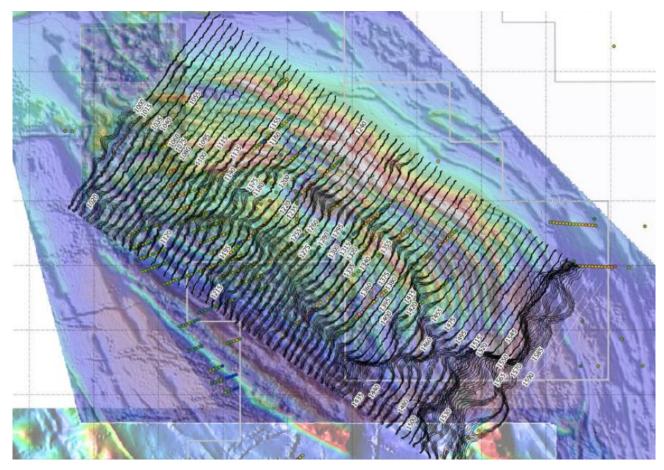


Figure 5: 2002 HoistEM survey and magnetics over Diorite Hill



### **Newexco Evaluation**

Previous exploration at East Laverton has not only been hampered by shallow cover and a focus on other commodities (Pt, Pd, Au, and Ni Laterite) but also by a fundamental assumption that the Rotorua Complex is an intrusive feeder pipe to Diorite Hill (rather than an extrusive komatiite) potentially incorrectly implying that that the basal contact is therefore in the south-west.

Recent work by leading exploration and geophysical consultants Newexco contends that the basal part of the Diorite Hill Ultramafic Sequence is in the north-east. This interpretation is based on three key pieces of evidence. Firstly, historical electron microscope work identified that the plagioclase mineral composition is more calcic in the north-east and sodic in the south-west. Secondly, downhole chemistry within one historical diamond drill-hole (DHDD001) indicated a grading towards more primitive nickel, chromium and titanium chemistry towards the north-east. Thirdly, the dip of the layering steepens from the south-west to the north-east, consistent with slumped saucer-shaped layering typical in a layered intrusion that has subsequently been tilted. It is this basal north-east margin of Diorite Hill that is now considered to be most prospective for nickel accumulation.

#### Planned Ground Electro-magnetic Survey

Newexco have recommend the next steps to explore the project for massive nickel-sulphide accumulations using a Moving Loop Electro-Magnetic (MLEM) survey.

Diorite Hill will be tested using 43 400m loops at a broad 1,200mx1,200m spacing with 4 high sensitivity sounds taken 400m from the loop centers. This is designed to detect any conductive sources of a Nova style and scale. Areas of interest would then be infilled with 200m loops at a 400x100m spacing.

For the Rotorua complex, it is recommended to go straight to the 400m x100m infill spacing due to the narrower geometry of the formation. Here, an allowance for infilling areas of interest is also assumed at 200mx100m.

A total of 45 days for a geophysical survey crew would be required and will be planned once the tenements are granted.



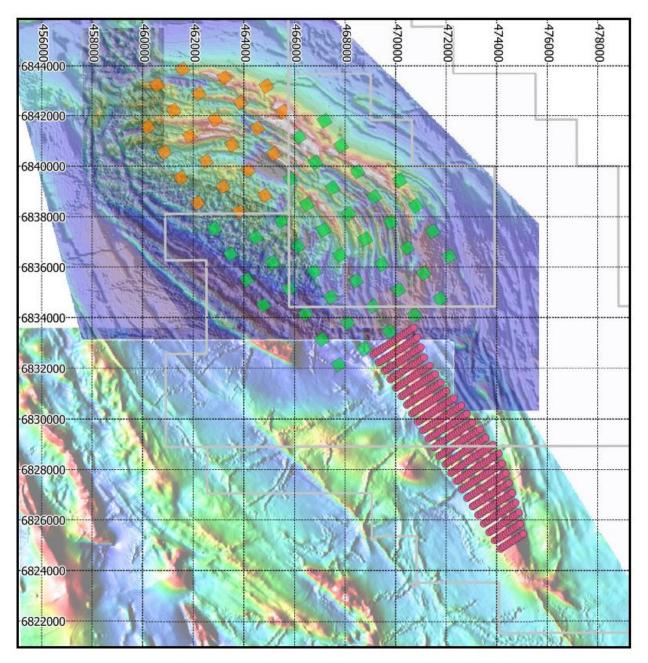


Figure 6: Planned Ground EM survey at East Laverton (Green and Red).

The release of this ASX announcement was authorised by the Executive Chairman on behalf of the Board of Directors of the Company.

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## About Great Southern Mining

Great Southern Mining Limited is a leading Australian listed gold exploration company. With significant land holdings in the world-renowned gold districts of Laverton in Western Australia and Mt Carlton in North Queensland, all projects are located within 25km of operating gold mills and major operations.

The Company's focus is on creating and capturing shareholder wealth through efficient exploration programs and strategic acquisitions of projects that complement the Company's existing portfolio of quality assets.

For further information regarding Great Southern Mining Limited please visit the ASX platform (ASX:GSN) or the Company's website <u>www.gsml.com.au</u>.

#### **Competent Person's Statement**

The information in this report that relates to exploration results at East Laverton is based on, and fairly represents, information and supporting documentation compiled by Simon Buswell-Smith. Mr Buswell-Smith is a full-time employee of Great Southern Mining Limited. He has sufficient experience relevant to the style of mineralization and type of deposit under consideration. Mr Buswell-Smith is a Member of the Australian Institute of Geoscientists and as such, is a Competent Person for the Reporting of Exploration Results, Mineral Resources and Ore Reserves under the JORC Code (2012). Mr Garcia consents to the inclusion in the report of the matters based on his information in the form and context in which they occur.

#### **Forward Looking Statements**

Forward- looking statements are only predictions and are not guaranteed. They are subject to known and unknown risks, uncertainties and assumptions, some of which are outside the control of the Company. Past performance is not necessarily a guide to future performance and no representation or warranty is made as to the likelihood of achievement or reasonableness of any forward-looking statements or other forecast. The occurrence of events in the future are subject to risks, uncertainties and other factors that may cause the Company's actual results, performance or achievements to differ from those referred to in this announcement. Given these uncertainties, recipients are cautioned not to place reliance on forward looking statements. Any forward-looking statements in this announcement speak only at the date of issue of this announcement. Subject to any continuing obligations under applicable law and the ASX Listing Rules, the Company, its directors, officers, employees and agents do not give any assurance or guarantee that the occurrence of the events referred to in this announcement will occur as contemplated.